

REMARKS

Claims 1, 3, 6-8, 10-12, 14, 16-19 and 21-22 are pending in this application. Claims 1, 6, 7, 11, 16, 17, 18, 19, 21 and 22 are independent.

The present invention provides a hole forming tool whose tool life is increased without degrading cutting accuracy. Specification at [0006]. A main body of the hole forming tool is constructed of a cemented carbide which comprises  $10\pm 2$  wt % Co,  $0.65\pm 0.25$  wt % Cr, WC for a balance thereof, and inevitable impurities Specification at [0023].

Claims 1, 3-8, 10-12, and 14-22 are rejected under 35 U.S.C. §103(a) over the Tool and Manufacturing Engineer's Handbook, pages 9-14 to 9-47 ("Engineer's Handbook") in view of U.S. Patent No. 4,583,888 ("Mori") and U.S. Patent No. 4,971,485 ("Nomura").

Engineer's Handbook discloses various twist drills, which can contain cobalt and which can be plated with chromium. Engineer's Handbook at page 9-15 to 9-16.

However, Engineer's Handbook fails to suggest the limitation of independent Claims 1, 6, 7, 11, 16, 17, 18, 19, 21 and 22 that "a main body of said hole forming tool is constructed of a cemented carbide which comprises  $10\pm 2$  wt % Co,  $0.65\pm 0.25$  wt % Cr, WC for a balance thereof, and inevitable impurities".

The secondary references fail to remedy the deficiencies of Engineer's Handbook.

Mori is silent about Co and Cr, and fails to suggest the limitation of independent Claims 1, 6, 7, 11, 16, 17, 18, 19, 21 and 22 that "a main body of said hole forming tool is constructed of a cemented carbide which comprises  $10\pm 2$  wt % Co,  $0.65\pm 0.25$  wt % Cr, WC for a balance thereof, and inevitable impurities".

Nomura discloses a cemented carbide drill formed by a hard dispersed phase of WC and a B-1 type solid solution, and a bond metal phase of an iron family metal. Nomura at title; abstract. Nomura discloses:

The composition of the hard dispersed phase is expressed as  $(W_aM_b)(C_xN_y)$ , where *M represents Ti, or two or more metals, including Ti but excluding W, selected from the group IVa, Va and VIa* of the periodic table, and a, b, x and y represents molar fractions which are defined by relational expressions of  $a + b = 1$ ,  $x + y = 1$ ,  $x > 0$ ,  $y \geq 0$  and  $b \geq 0.4$  Nomura at abstract, lines 3-9.

However, Nomura fails to disclose the relative proportions of Ti and the metal selected from the group VIa when both are present.

For at least this reason, Nomura fails to suggest the limitation of independent Claims 1, 6, 7, 11, 16, 17, 18, 19, 21 and 22 that "a main body of said hole forming tool is constructed of a cemented carbide which comprises  $10 \pm 2$  wt % Co,  $0.65 \pm 0.25$  wt % Cr, WC for a balance thereof, and inevitable impurities".

The specification discloses that composition of the cemented carbide ensures the rigidity of the hole forming tool of the present invention.

[0023] According to a sixth characteristic, the main body of said hole forming tool is constructed of a cemented carbide which comprises  $10 \pm 2$  wt % Co,  $0.65 \pm 0.25$  wt % Cr, WC for a balance thereof, and inevitable impurities.

[0024] By using the above described cemented carbide, in which rigidity is high, as the material, the rigidity of the main body of the hole forming tool is ensured. Specification at [0023] - [0024].

Because the cited prior art fails to suggest the limitation of independent Claims 1, 6, 7, 11, 16, 17, 18, 19, 21 and 22 that "a main body of said hole forming tool is constructed of a cemented carbide which comprises  $10 \pm 2$  wt % Co,  $0.65 \pm 0.25$  wt % Cr, WC for a balance thereof, and inevitable impurities", the rejection under 35 U.S.C. § 103(a) should be withdrawn.

In view of the foregoing amendments and remarks, Applicant respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 06/04)

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman F. Oblon



Corwin P. Umbach, Ph.D.  
Registration No. 40,211